REMARKS

Claims 1-13 and 15-19 are all of the claims presently pending in the application. Applicant has not amended the claims by the present response.

Claims 1-13 and 15-19 stand rejected under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement.

Applicant respectfully traverses this rejection in the following discussion.

I. THE CLAIMED INVENTION

The invention of claim 1, for example, is directed to a group III-nitride-based compound semiconductor device, that includes a first p-layer and a second p-layer, the first p-layer and the second p-layer including an acceptor impurity, and an intermediate layer provided between the first p-layer and the second p-layer, wherein the intermediate layer contacts an entirety of the surface of the second p-layer and an entirety of the surface of the first p-layer, the first p-layer is formed on the light emitting layer, the intermediate layer is formed above the first p-layer, and the second p-layer is formed above the intermediate layer, and a band gap decreases from a position proximate to the light emitting layer to a position proximate the second p-layer (e.g., see Application at page 9, lines 1-5).

Accordingly, the intermediate layer exhibits low-conductivity due to doping of the donor impurity and, therefore, can offer an improved electrostatic withstand voltage while suppressing an increase in driving voltage. This effect results from the intermediate layer contacting the entire surface of the p-contact layer (or second p-layer) such that an applied voltage does not concentrate on a part of a p-electrode side but extends widely across the p-electrode side (see Application at page 6, line 14-page 7, and line 2).

II. THE WRITTEN DESCRIPTION REQUIREMENT

The Examiner has rejected claims 1-13 and 15-19 under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement. Specifically, the Examiner alleges that the originally filed specification does not provide support for the feature "wherein the intermediate layer comprises a substantially constant hole concentration in a thickness direction thereof", as recited in exemplary claim 1 and similarly recited in exemplary claims 7 and 11. The Examiner, however, is incorrect.

That is, a written description as filed is presumed to be adequate, until the Examiner presents sufficient evidence or reasoning to the contrary to rebut the presumption (see M.P.E.P. § 2163).

Applicant submits that the Examiner has failed to meet his burden of proof. In rejecting a claim, the Examiner must set forth express findings of fact to support a lack of written description conclusion. The express findings should:

1) Identify the claim feature at issue; and

2) Establish a *prima facie* case by providing reasons why a person skilled in the art at the time the application was filed would not have recognized that the inventor was in possession of the claimed invention. A general allegation of "unpredictability in the art" is not sufficient (see M.P.E.P. §2163.04).

The Examiner has identified the claim feature at issue. The Examiner, however, has not provided any reasons why a person skilled in the art at the time the application was filed would not have recognized that the inventor was in possession of the claimed invention. The Examiner merely alleges that the indentified feature is not supported by the specification.

Since the Examiner has clearly failed to meet his initial burden, Applicant submits that the burden to rebut the Examiner's rejection has not shifted to Applicant.

Notwithstanding the above, Applicant submits that originally filed specification provides sufficient support for each feature recited in the claimed invention.

To satisfy the written description requirement, a patent specification must describe the invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention (see *Moba, B.V. v. Diamond Automation, Inc.*, 325 F. 3d 1306, 1319, 66 USPQ2d 1429, 1438 (Fed. Cir. 2003)). (See M.P.E.P. §2163 and §2163.02).

Applicant submits that the originally filed specification describes the invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention.

Indeed, the intermediate layer before doping a donor (Si) has an acceptor (Mg) concentration distribution in the thickness direction thereof as shown in Figure 2 (US 2006/0097283A1 (which corresponds to the Application) at paragraph 0053). The acceptor (Mg) concentration distribution is caused by technical reasons although the acceptor is not intentionally doped (US 2006/0097283A1 at paragraph 0036). As shown in Figure 2, the acceptor (Mg) concentration distribution in the thickness direction of the intermediate layer can be measured such that the concentration of Mg in the intermediate layer (108) lowers from the first p-layer (107) to the second p-layer (109) (i.e., declined distribution).

Here, in the invention, it is considered that the activation rate (hole concentration/acceptor concentration when excited at room temperature) of the acceptor (Mg) doped is approximately one tenth of that (electron concentration/donor concentration when

excited at room temperature) of donor (Si) doped (US 2006/0097283A1 at paragraph 0053). For example, when the acceptor is included ten times the donor at a region in the intermediate layer, the hole concentration can be almost compensated by the electron concentration at the region.

Thus, in consideration of the measured acceptor (Mg) concentration distribution, the donor (Si) is doped in a concentration distribution to compensate the hole concentration (US 2006/0097283A1 at paragraph 0038). For example, as shown in Figure 2, the acceptor (Mg) concentration at the boundary with the first p-layer (107) of the intermediate layer (108) is about 1 x $10^{19}/cm^3$ and the donor (Si) concentration doped is about 1 x $10^{18}/cm^3$, i.e., one tenth of the acceptor concentration. On the other hand, as shown in Figure 2, the acceptor (Mg) concentration at the boundary with the second p-layer (109) of the intermediate layer (108) is about 3 x $10^{18}/cm^3$ and the donor (Si) concentration doped is about 3 x $10^{17}/cm^3$, i.e., one tenth of the acceptor concentration. Thus, the hole concentration is rendered nearly equal to the donor concentration at all regions in the thickness direction of the intermediate layer.
As a result, the hole concentration in the intermediate layer (108) must be compensated at all regions in the thickness direction of the intermediate layer such that it is substantially constant (as shown below) in the thickness direction between both boundaries with the first p-layer (107) and the second p-layer (109).

The invention as claimed has the feature that "*the intermediate layer comprises a substantially constant hole concentration in a thickness direction thereof.*"

Therefore, the group III-nitride-based compound semiconductor device of the invention shows an improved electrostatic withstand voltage, compared with the one in which the intermediate layer 108 is not formed. Also, the group III-nitride-based compound

semiconductor device can have a thinner intermediate layer, compared with the one in which the intermediate layer 108 is not doped with silicon, and therefore it is possible to reduce the driving voltage as well as to improve the electrostatic withstand voltage (US 2006/0097283A1 at paragraph 0054).

Therefore, Applicant submits that the originally filed specification provides sufficient support for each and every feature recited in the claims. Accordingly, Applicant respectfully requests the Examiner to reconsider and withdraw this rejection.

III. FORMAL MATTERS AND CONCLUSION

Applicant submits that when rejecting a claim under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement, "*[t]he examiner should still consider the subject matter added to the claim in making rejections based on prior art since the new matter rejection may be overcome by applicant.*" (See M.P.E.P. § 2163.06).

Since the Examiner has not rejected the claims based on prior art, Applicant assumes that should the Examiner withdraw the rejection under 35 U.S.C. § 112, first paragraph, the Application is in condition for immediate allowance. Alternatively, if the Examiner includes prior art rejections in a subsequent Office Action, then the Examiner is precluded from issuing a Final Office Action, as the Examiner should have included the prior art rejections in the present Office Action.

In view of the foregoing, Applicant submit that claims 1-13 and 15-19, all of the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. Applicant respectfully requests the Examiner to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, Applicant requests the Examiner to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The undersigned authorizes the Commissioner to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

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